

A DISTRIBUTIONAL CHECKLIST OF NORTH AMERICAN  
GENERA OF AQUATIC DRYOPOID  
AND DASCILLOID BEETLES

(ELMIDAE, DRYOPIDAE, LIMNICHIDAE, CHELONARIIDAE,  
HETEROCERIDAE, PSEPHENIDAE, PTILODACTYLIDAE,  
CYPHONIDAE, GEORYSSIDAE)

HARLEY P. BROWN

Department of Zoology and Stovall Museum of Science and History,  
University of Oklahoma, 730 Van Vleet Oval,  
Norman, Oklahoma 73069, U. S. A.

ABSTRACT

Distributional maps show the known range within the United States of every aquatic or semi-aquatic genus representing the dryopoid families Elmidae (Elminthidae), Dryopidae, Limnichidae, Chelonariidae, Heteroceridae, Psephenidae, and Ptilodactylidae, the dascilloid family Cyphonidae (Helodidae), and the hydrophiloid family Georyssidae. Occurrences in Canada and Mexico are also indicated, but not by province or state. Genera known from Mexico, but not from the United States, are listed, but not included in maps. The dryopoid genera are discussed in terms of possible geographic origin and their distribution within the continent, hemisphere, and world. Selected references are presented in addition to the literature cited.

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INTRODUCTION

Judging from the frequency with which I receive requests for information or other forms of aid relating to dryopoid distribution, it should be worthwhile to make available such records as I have, at least at the generic level. This summary of records is based primarily upon the specimens in the dryopoid collections of the Stovall Museum of Science and History at the University of Oklahoma, the Illinois Natural History Survey (which includes the Paul N. Musgrave collection), the U. S. National Museum of Natural History, the California Academy of Sciences, California Insect Survey (Univ. Cal., Berkeley), Univ. California at Davis, Univ. California at Riverside, Univ. Arizona, and Royal Ontario Museum. Additional records have been gleaned from many other public and private collections (see acknowledgments) and from the literature, including Leng's list and the supplements thereto, but no claim is made that the list is complete. The maps are especially effective at revealing obvious gaps, which might be filled by specimens in collections I have not checked, or which may indicate regions in which no one has yet seriously sought dryopoids. I should appreciate being informed of additional records that would serve to fill in gaps—or better, receipt of specimens.

In this condensed list, I have made no attempt to cite sources for the records. The bibliography includes selected references which might be helpful to the reader.

There is no complete accord at present as to whether certain genera should be included among the Dryopoidea. For example, *Anchyteis*, *An-*

*chytarsus*, and *Stenocolus*—here listed in the family Ptilodactylidae, and *Acneus*, *Dicranopselaphus*, *Ectopria*, and *Eubrianax*—here listed in the family Psephenidae, are all included by Arnett (1963) within the family Dascillidae in the Superfamily Dascilloidea. In view of Crowson's (1967) convincing argument, I agree that the Georyssidae are not dryopoids; I list them only because someone might seek them here. The ptilodactylids included here are only those associated with an aquatic habitat. The Cyphonidae (Helodidae) are not dryopoids, but are included because they often turn up in dryopoid collections and information concerning their distribution is scant. The heterocerid records included are almost entirely from the literature. The families and genera represented in the list are as follows (those indicated by an asterisk are not known to occur north of Mexico, and are not shown in the maps):

DRYOPOIDEA

ELMIDAE (ELMINTHIDAE)

LARINAE

*Hexanchorus\**  
*Lara*  
*Phanocerus*

ELMINAE

*Ancyronyx*  
*Ampumixis*  
*Atractelmis*  
*Austrolimnius\**  
*Cleptelmis*  
*Cylloepus*  
*Dubiraphia*  
*Elsianus*  
*Gonielmis*  
*Heterelmis*

*Heterlimnius*  
*Hexacylloepus*  
(*Limnius*, see  
*Oulimnius*)  
*Macronychus*  
*Microcylloepus*  
*Narpus*  
*Neocylloepus*  
*Neoelmis*  
*Optioservus*

*Ordobrevia*  
*Oulimnius*  
*Promoresia*  
*Rhizelmis*  
*Stenelmis*  
*Tolriolus\**  
*Xenelmis\**  
*Zaitzevia*

DRYOPIDAE

*Dryops*  
*Elmoparnus\**  
*Helichus*  
*Pelonomus*

PTILODACTYLIDAE

(genera associated with  
aquatic habitats)  
*Anchycteis*  
*Anchytarsus*  
*Stenocolus*  
*Tetraglossa\**

LIMNICHIDAE

*Cyphonichus\**  
*Ersachus\**  
*Limnichus*  
*Lutrochus*  
*Phalacrichus\**  
*Physemus*  
*Throscinus*

HETEROCERIDAE

*Centuriatus*  
*Culmus\**  
*Dampfius*  
*Efflagitatus*  
*Explorator*  
*Lanternarius*  
*Lapsus*  
*Microaugyles*  
*Neoheterocerus*  
*Olmedous\**  
*Peditatus*  
*Tropicus*

CHELONARIIDAE

*Chelonarium*

PSEPHENIDAE

EUBRIINAE

*Acneus*  
*Dicranopselaphus*  
*Ectopria*

EUBRIANACINAE

*Eubrianax*

PSEPHENINAE

*Psephenops\**  
*Psephenus*

HYDROPHILOIDEA

GEORYSSIDAE

*Georyssus*



## DASCILLOIDEA

CYPHONIDAE (HELODIDAE)

*Cyphon**Elodes**Microcara**Ora**Prionocyphon**Sarabandus**Scirtes*

## COMMENTS

Although the maps need no explanation, I include a few helpful remarks concerning some of the genera. Speculations concerning origins, etc. are based upon known distribution, not upon paleontological or other evidence. Among the elmids: *Phanocerus*, *Cylloepus*, *Elsianus*, *Heterelmis*, *Hexacylloepus*, *Neocylloepus*, and *Neoelmis* are essentially Neotropical genera invading the border states from Mexico, although *Heterelmis* ranges somewhat farther afield than the rest. *Microcylloepus* is most widespread throughout the hemisphere. *Dubiraphia*, though abundant and widespread in the United States, is rare in the southwest. *Stenelmis* occurs in much of the Old World and is extremely successful in our eastern and central states, but barely extends into Mexico and is represented west of the great plains chiefly by very restricted relict populations in a few warm springs or similarly isolated sites. In the western coastal states *Stenelmis* is replaced by *Ordobrevia*, which is very similar and probably derived from *Stenelmis*. *Macronychus* and *Oulimnius* are Palearctic genera which probably entered from Europe. *Zaitzevia* and *Ordobrevia*, on the other hand, probably entered from Asia. *Optioservus* and *Cleptelmis* also occur in eastern Asia

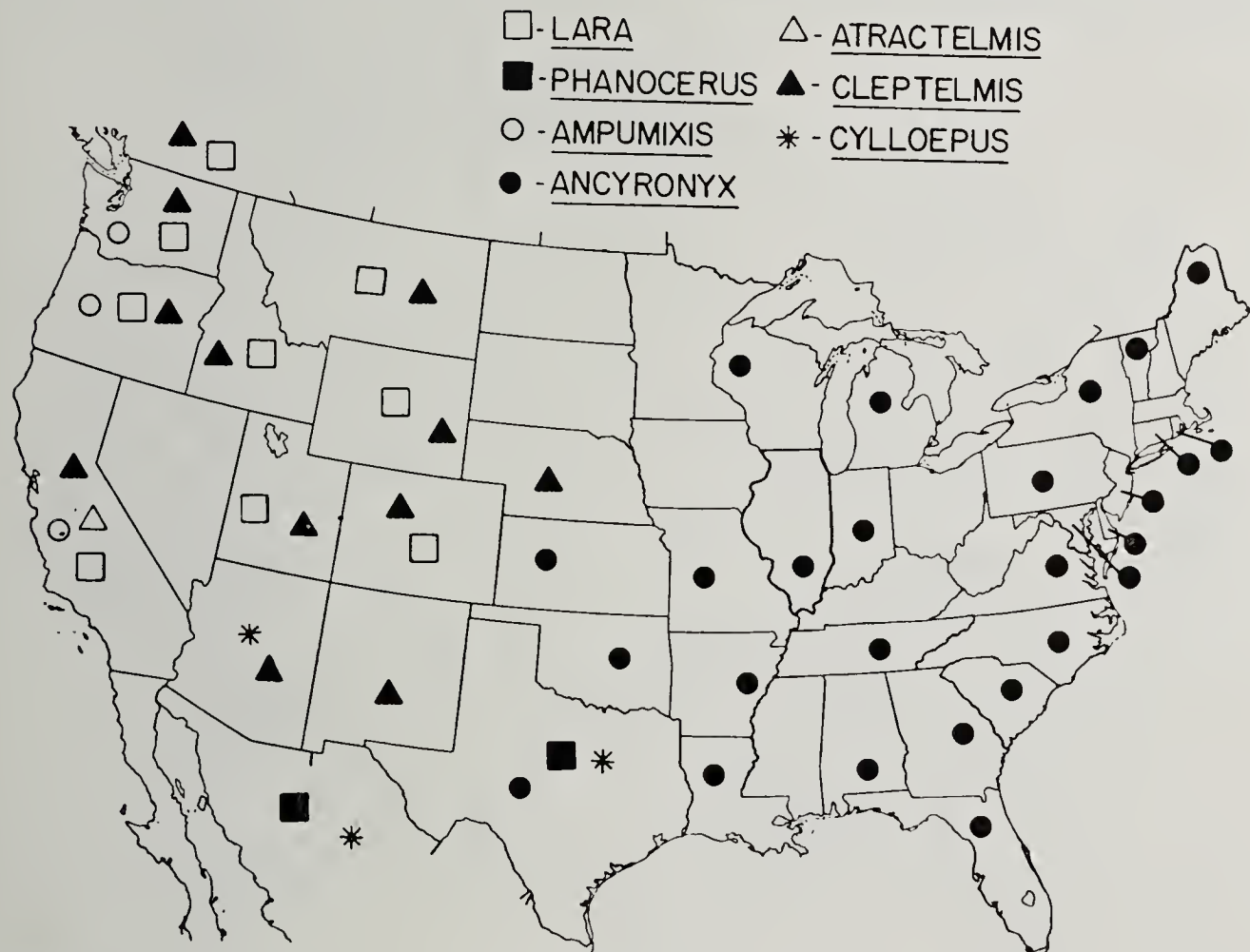


Fig. 1. Distribution of Dryopoidea. Elmidae: Larinae: *Lara*, *Phanocerus*. Elminae: *Ampumixis*, *Ancyronyx*, *Atractelmis*, *Cleptelmis*, *Cylloepus*. In Canada and Mexico, the symbols indicate only the occurrence of the appropriate genera in the country, not the province or state.

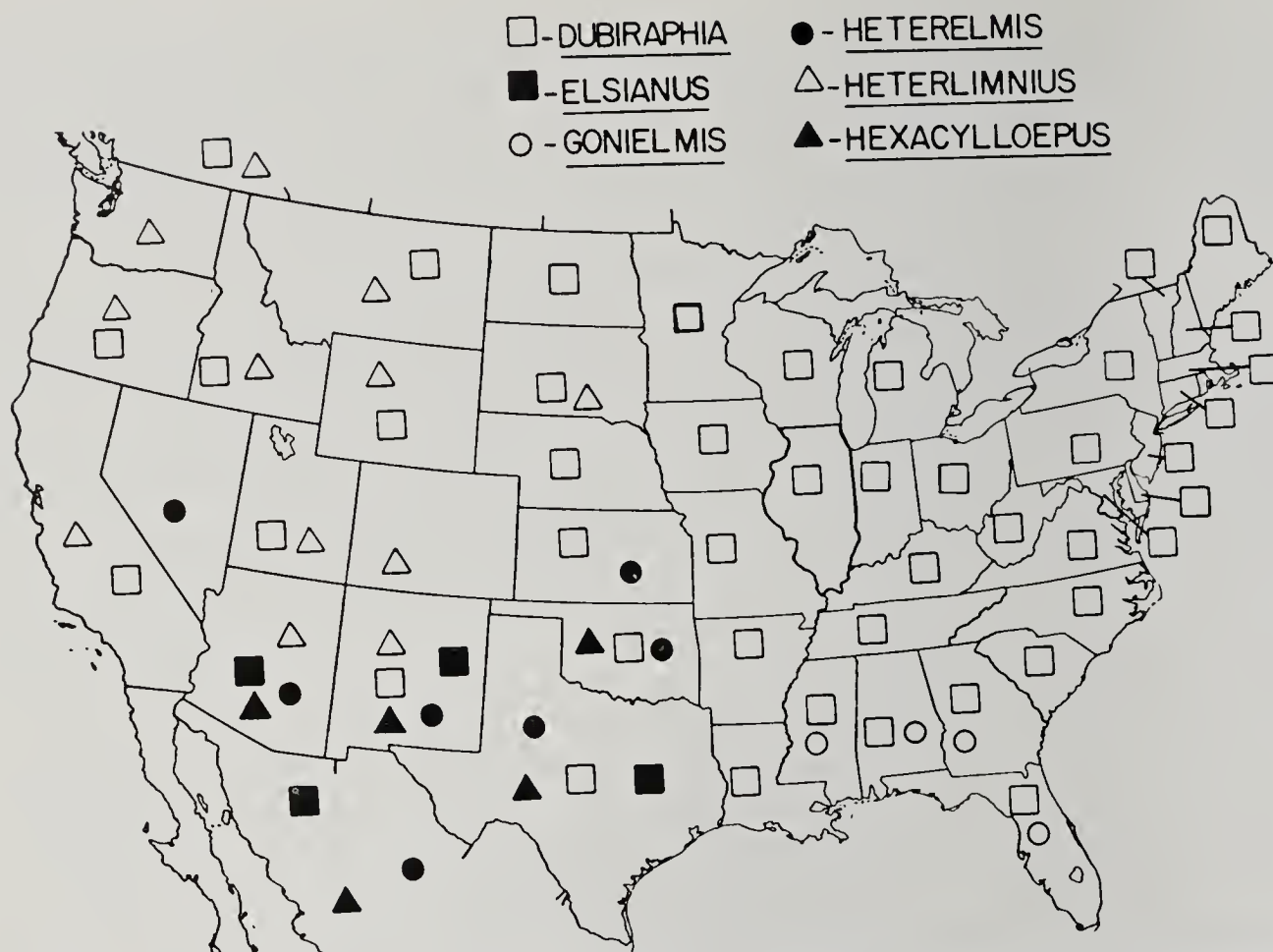


Fig. 2. Distribution of Dryopoidea. Elmidae: Elminae (continued): *Dubiraphia*, *Elsianus*, *Gonielmis*, *Heterelmis*, *Heterlimnius*, *Hexacylloepus*. In Canada and Mexico, symbols indicate only occurrence within the country.

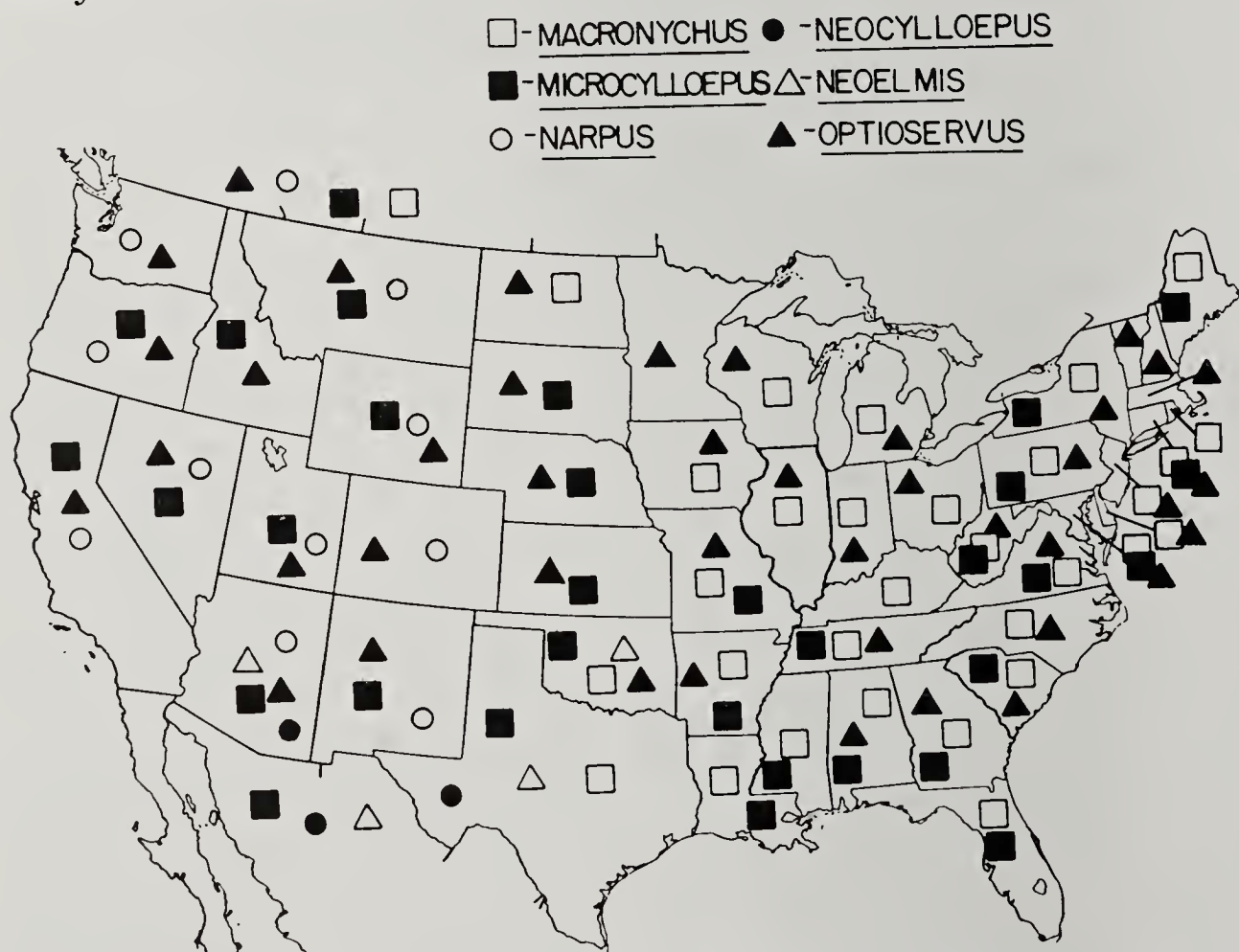


Fig. 3. Distribution of Dryopoidea. Elmidae: Elminae (continued): *Macronychus*, *Microcyллоepus*, *Narpus*, *Neocylloepus*, *Neoelmis*, *Optioservus*. In Canada and Mexico, symbols indicate only occurrence within the country.

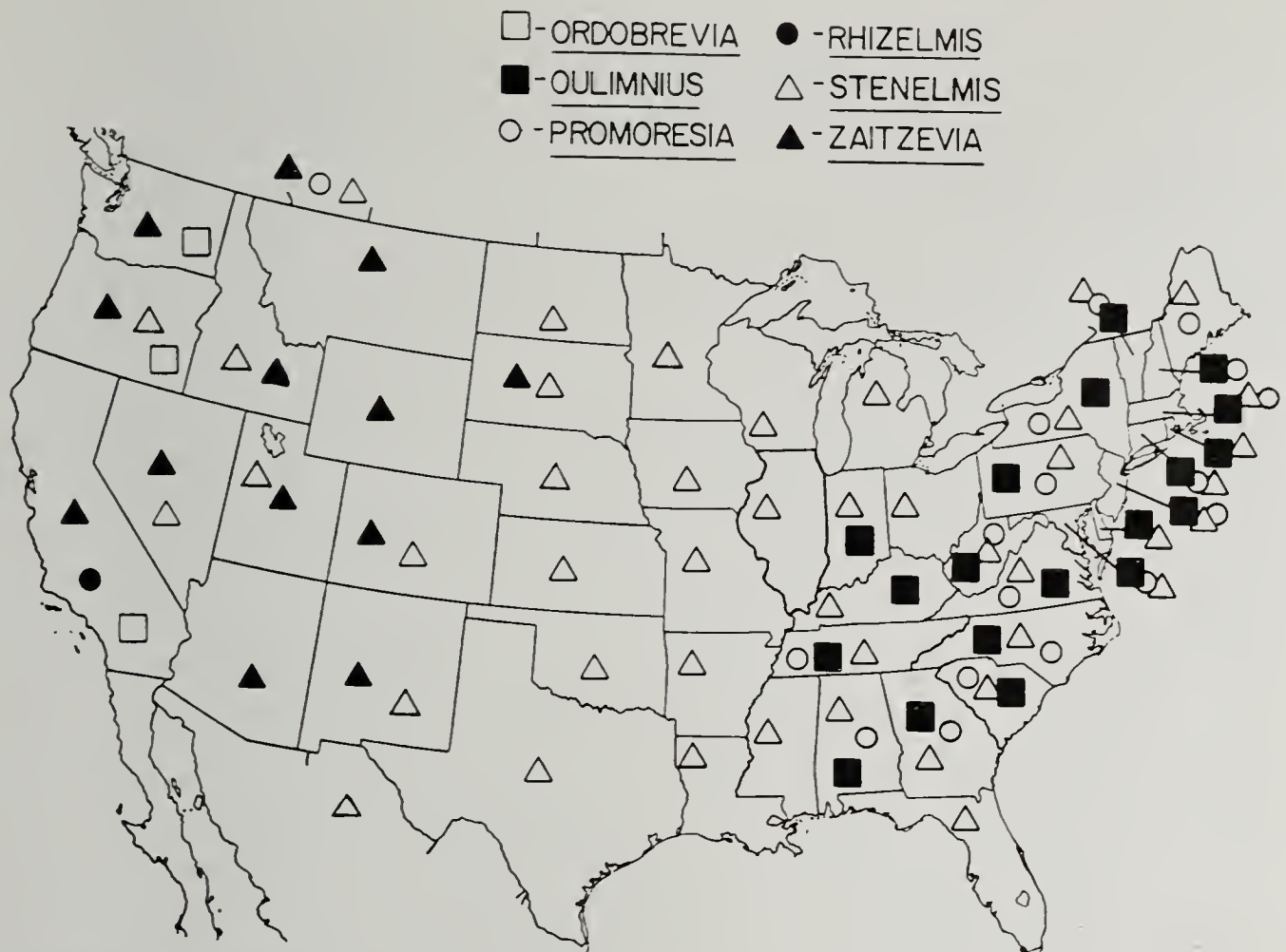


Fig. 4. Distribution of Dryopoidea. Elmidae: Elminae (continued): *Ordobrevia*, *Oulimnius*, *Promoresia*, *Rhizelmis*, *Stenelmis*, *Zaitzevia*. In Canada and Mexico, symbols indicate only occurrence within the country.

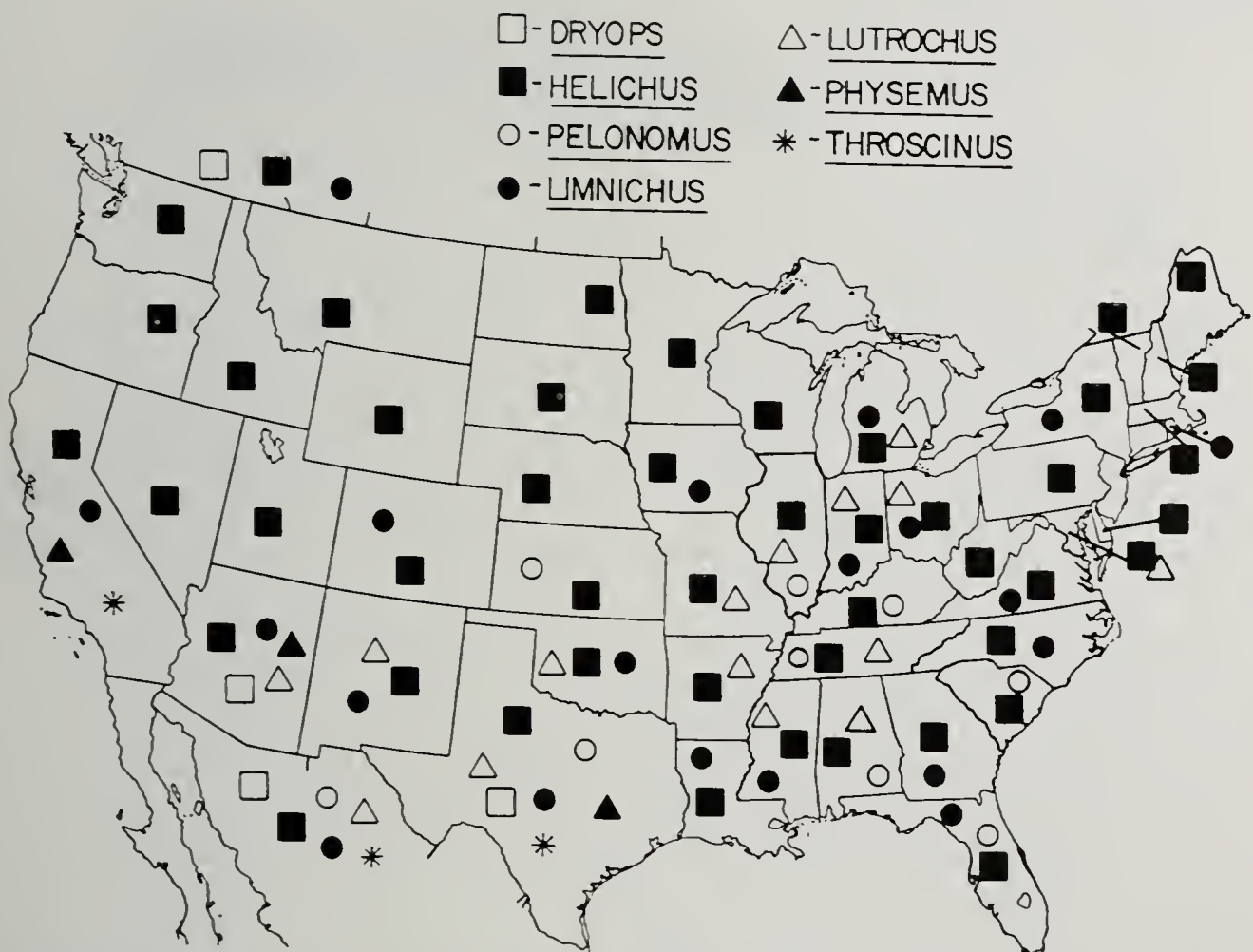


Fig. 5. Distribution of Dryopoidea. Dryopidae: *Dryops*, *Helichus*, *Pelonomus*. Limnichidae: *Limnichus*, *Lutrochus*, *Physemus*, *Throscinus*. In Canada and Mexico, symbols indicate only occurrence within the country.



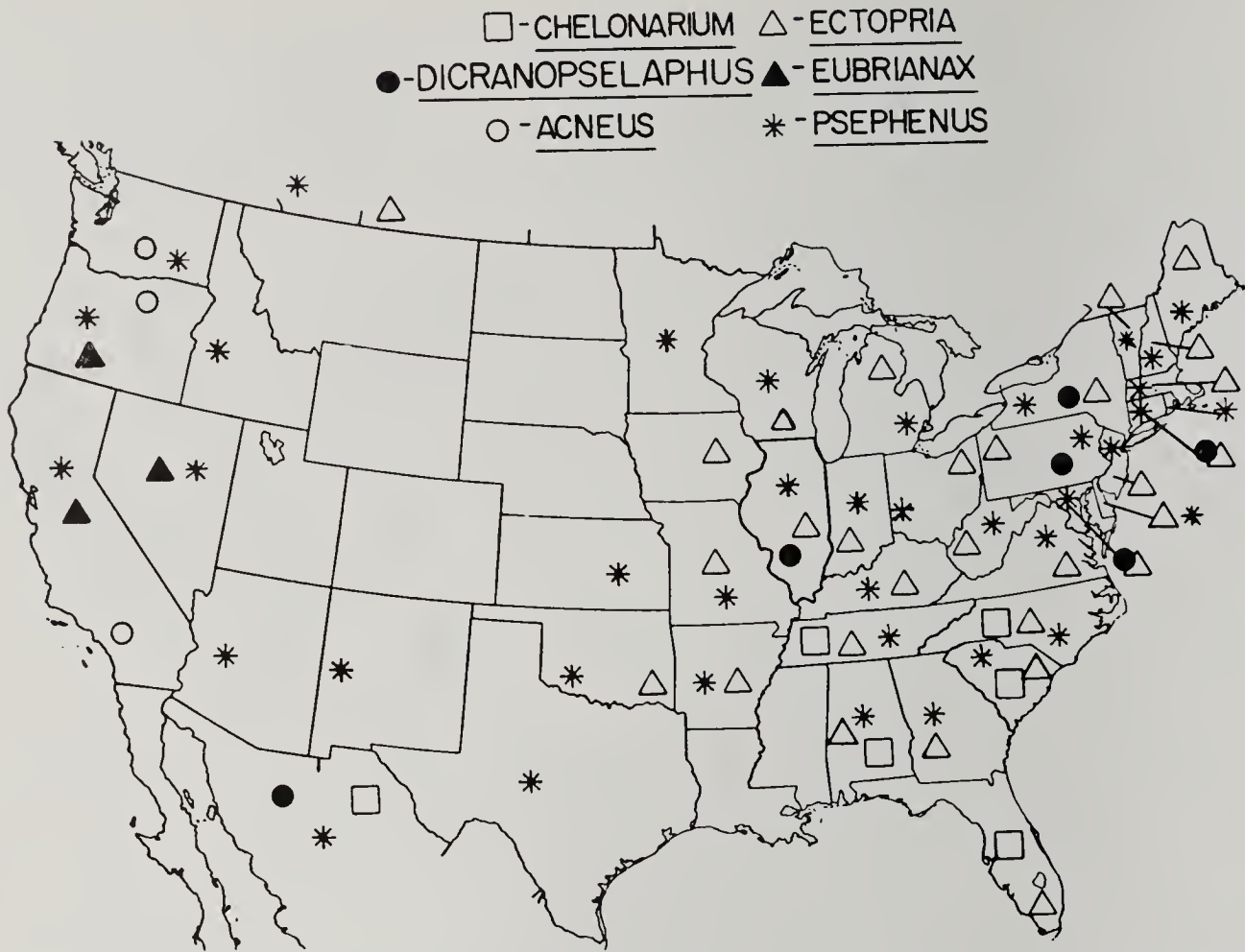


Fig. 6. Distribution of Dryopoidea. Chelonariidae: *Chelonarium*. Psephenidae: *Acneus*, *Dicranopselaphus*, *Ectopria*, *Eubrianax*, *Psephenus*. In Canada and Mexico, symbols indicate only occurrence within the country.

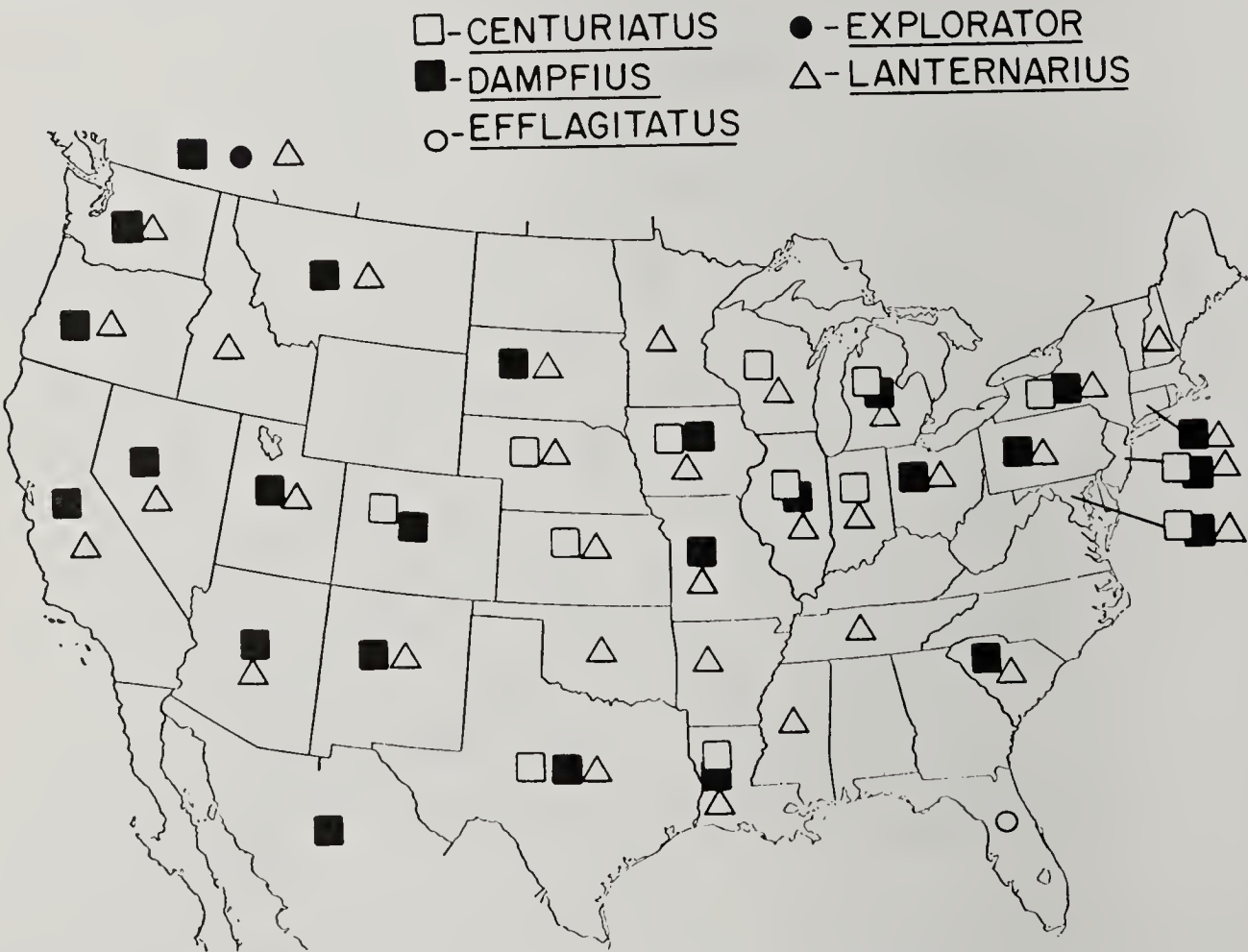


Fig. 7. Distribution of Dryopoidea. Heteroceridae: *Centuriatus*, *Dampfius*, *Efflagitatus*, *Explorator*, *Lanternarius*. In Canada and Mexico, symbols indicate only occurrence within the country.

as well as North America. *Lara*, *Ampumixis*, *Atractelmis*, *Heterlimnius*, *Narpus*, and *Rhizelmis* probably evolved (arose) in our western states. *Ancyronyx*, *Gonielmis*, and *Promoresia* presumably evolved in the eastern states. *Dubiraphia* is also indigenous, but the region of origin is less apparent—perhaps midcontinental. Further collecting should not only fill in the apparent gaps in distribution, but should extend the range of several genera (e.g., we may expect *Ancyronyx* in Ohio and Kentucky, *Optioservus* and *Zaitzevia* in the mountains of Mexico just below southeastern Arizona).

Among the dryopids: in this hemisphere, *Dryops* is common in tropical and subtropical regions; it extends upward into southern Arizona and the Rio Grande valley; the Canadian records represent an alpine European species, *D. viennensis* (Heer), introduced in the rather recent past and now established along the St. Lawrence River in Quebec. Many of the Old World species of *Dryops* occur in temperate zones. *Helichus*, which is almost cosmopolitan, is easily our most widespread and common genus. One of our western species, *H. suturalis* LeConte, extends as far southward as Panama. *Pelonomus* is primarily Neotropical; our single species is common in southern Florida, being progressively less common toward Illinois and Kansas. The note in my key indicating that *Pelonomus* occurs in the Old World (Brown 1970 b) is in error. (The error stemmed from the fact that a Brazilian species was erroneously described as from Portugal.) Increased use of blacklight trapping will probably extend the known range of this genus; it is not collected in streams, where *Helichus* is so prominent.

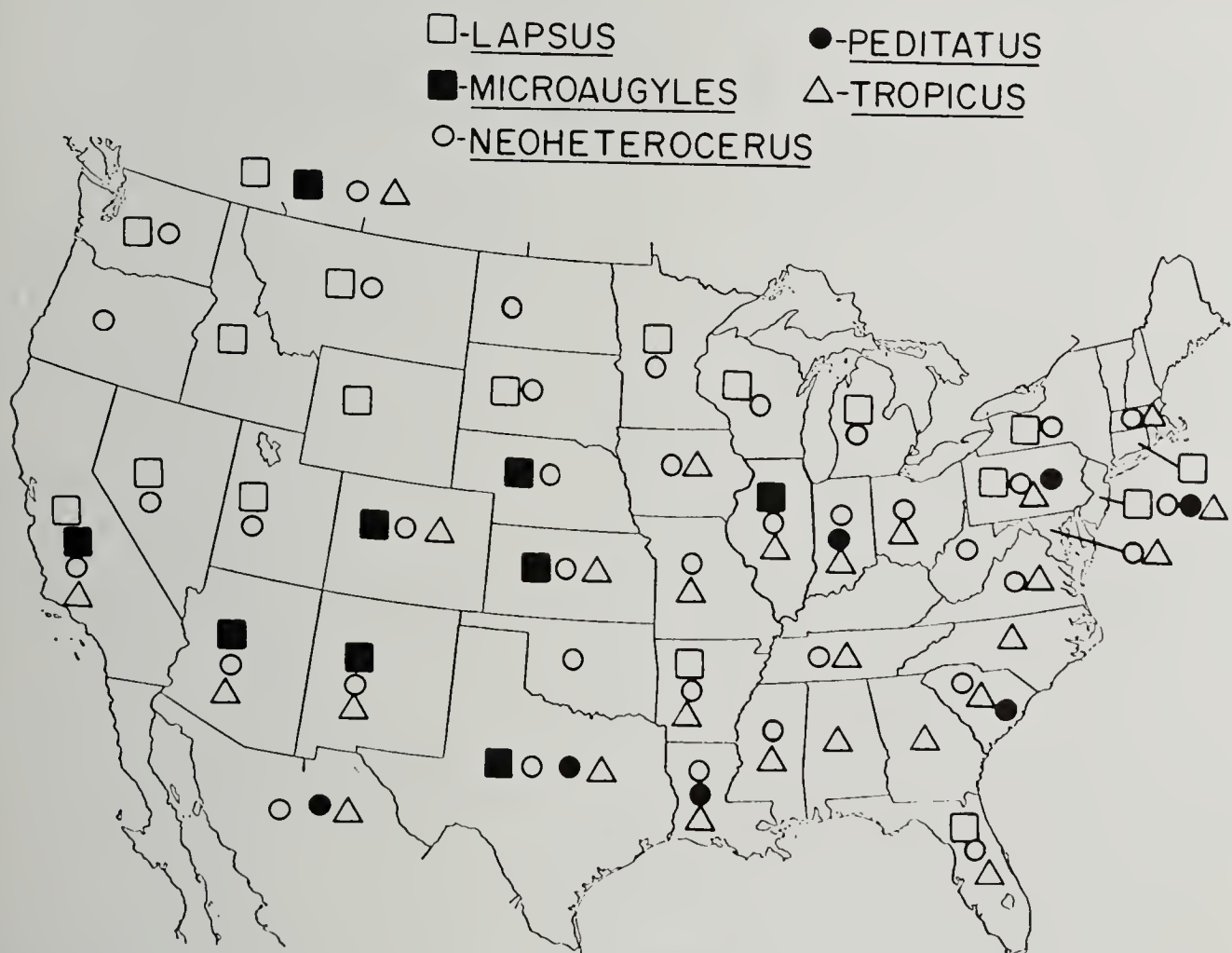


Fig. 8. Distribution of Dryopoidea. Heteroceridae (continued): *Lapsus*, *Microaugyles*, *Neoheterocerus*, *Peditatus*, *Tropicus*. Symbols in Canada and Mexico indicate only occurrence within the country.



Among the limnichids: since most species readily pass through the mesh of the average net and since most are not bonafide riffle beetles, the present records are probably quite incomplete. A further problem is that few entomologists have attempted to identify them; this applies especially to *Limnichus*, which was subdivided into several genera by Casey. No one has published on this group in North America since Casey (1912), but for convenience I here follow Leech and Chandler (1956) in retaining all our species within the broader genus. David Wooldridge is presently revising the group. Although *Limnichus* is virtually world-wide in distribution, the remaining genera here listed appear to be essentially Neotropical. *Physemus* is southwestern, occurring on wet mud. *Lutrochus* thrives in rapid streams high in calcium content, the adults of our single eastern species being more riparian than aquatic; the genus ranges from South America northward only to Arizona in the west, but northeastward as far as the Potomac River. *Throscinus* seems essentially confined to ocean beach flats in Mexico, California, and Texas. However, since it also occurs in the West Indies, it might be expected in Florida and perhaps along the remainder of the Gulf coast.

Although there are many species of *Chelonarium* in Asia, Central, and South America, it is probable that our sole species was derived from the West Indies.

Of the psephenids, *Acneus* and *Dicranopselaphus* seem rare. In fact, although *Dicranopselaphus* has been reported from Illinois and several eastern states, no one has yet reported its larva in the United States. The larva figured by Brown (1972b) was taken near Acapulco, Mexico, where

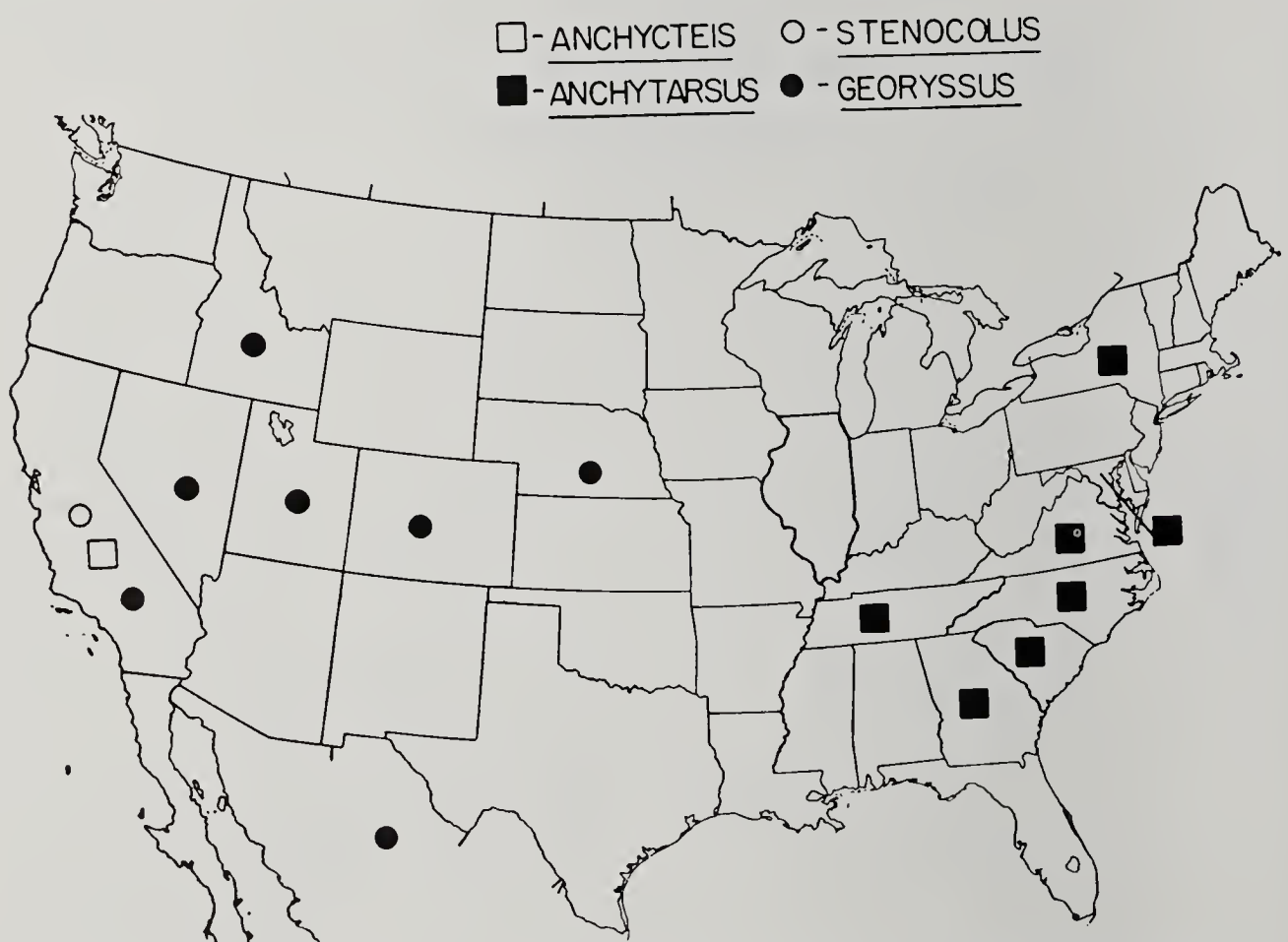


Fig. 9. Distribution of Dryopoidea. Aquatic Ptilodactylidae: *Anchycteis*, *Anchytersus*, *Stenocolus*. Also distribution of Hydrophiloidea: Georyssidae: *Georyssus*. The symbol in Mexico does not indicate the states in which *Georyssus* occurs.



he found 2 such specimens. *Dicranopselaphus* is represented by several Central American and Mexican species, as well as the 1 in the United States. *Acneus* is known only from certain portions of California, Oregon, and Washington. *Ectopria* is relatively common in the eastern half of the United States, the "false water penny" larvae often being taken along with common water pennies (*Psephenus*). *Eubrianax* is an Old World genus of Africa and Asia also known from the western portions of North and South America. In California and Oregon it is apparently much commoner and more widespread than *Acneus*. It also occurs in the mountainous western edge of Nevada. *Psephenus* is easily the most successful of our psephenids, with 1 species occupying the eastern half of the nation, another the western coastal states and Idaho, a third Arizona and points southward, and a fourth Texas and adjacent Mexican states. Three additional species are being described by Brown and Murvosh from Arizona and New Mexico. Other species, some yet to be described, occur in Mexico and Central America.

Our many species of Heteroceridae are widely distributed and often common. Pacheco (1964, 1969) is the only recent worker who has devoted much attention to the family. Pacheco (1964) subdivided the heterocerids into 5 tribes: Elythomerini in Australia, Micilini in the Palaearctic, Augyliini in the Nearctic and Palaearctic, Heterocerini in Europe and the Americas, and Tropicini in Nearctic and Neotropical regions. Of the Augyliini, *Explorator* is known only from Alaska and Canada, *Centuriatus* and *Microaugyles* from Canada and the United States. *Microaugyles* must also occur in Mexico, since 1 species is in El Paso, Texas, southern Arizona, and

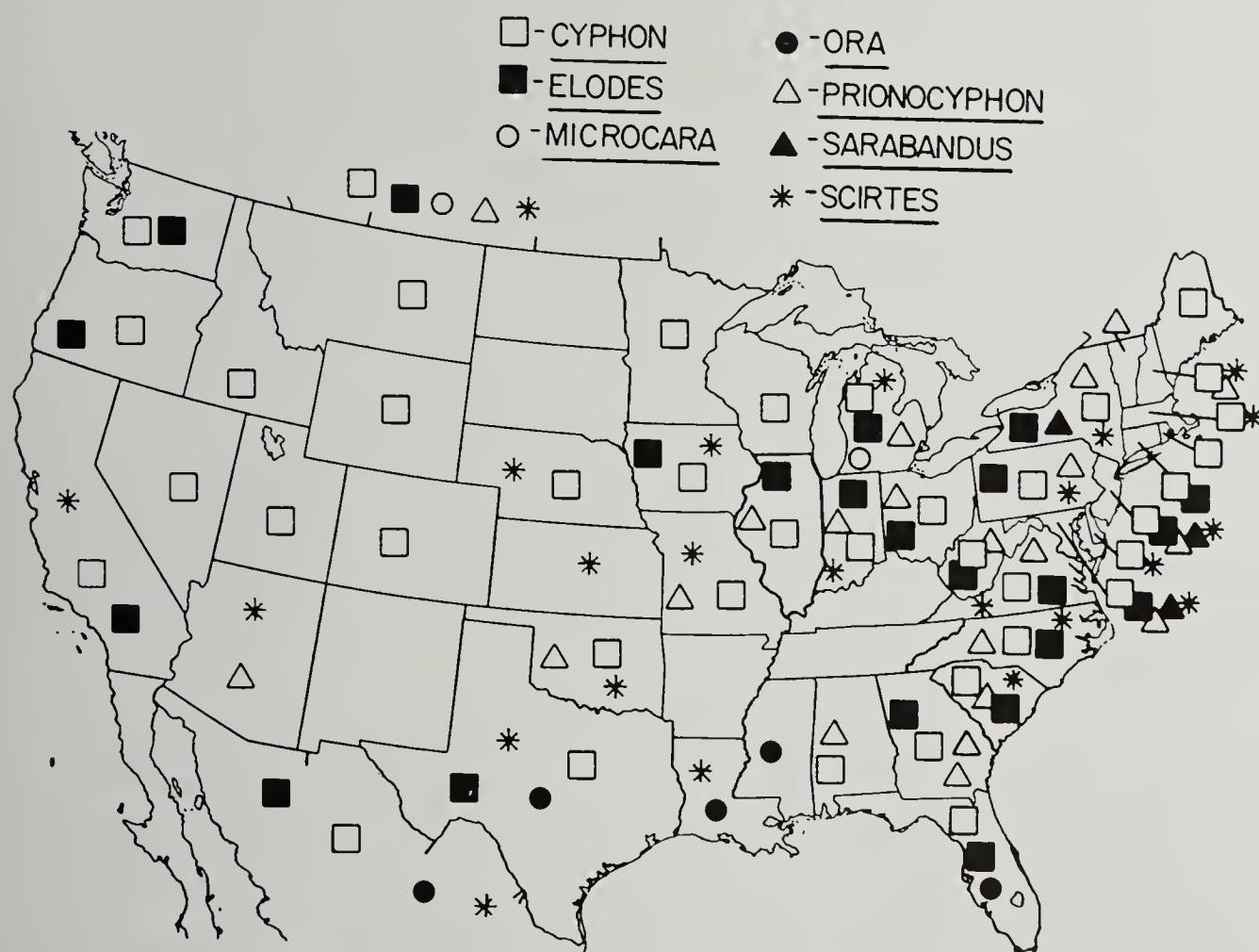


Fig. 10. Distribution of Dascilloidea. Cyphonidae (=Helodidae): *Cyphon*, *Elodes*, *Microcara*, *Ora*, *Prionocyphon*, *Sarabandus*, *Scirtes*. Symbols in Canada and Mexico indicate only occurrence within the country.

New Mexico. Of the Heterocerini, *Heterocerus* is restricted to a single European species; the remaining genera are New World forms: *Erus* and *Gradus* in South America, *Efflagitatus* in South America except for 1 species in Florida; *Filiolus* in Cuba; *Neoheterocerus* in the Antilles and North America; *Olmedous* in Mexico; *Culmus* in Guatemala and Mexico; *Dampfius* from Guatemala to Canada; *Peditatus* in Mexico and the United States; *Lapsus* and *Lanternarius* in Canada and the United States. *Lanternarius* is also to be expected in Mexico. The tribe Tropicini includes 1 genus, *Tropicus*, with 2 species in the United States and 11 Neotropical species.

Of the ptilodactylids, as previously mentioned, only those associated with water are included here. *Anchyteis* and *Stenocolus*, like the elmids *Atractelmis* and *Rhizelmis*, perhaps evolved in California, since they are known only from that state. In contrast, *Anchyrtarsus* is known both from some of our eastern states, and from scattered records in Mexico, Central America, and even Peru.

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